

Glossary of terms used in the Fred L. Soper exhibit
March 12, 2003

ANOPHELES--A large genus of over 400 species of mosquitoes, approximately two dozen of which are vectors of malaria. Since the anopheles male does not bite, only the female is responsible for the transmission of parasites.

CARRIER--An individual who harbors the specific organisms of a disease without manifest symptoms and is capable of transmitting the infection.

CHENOPODIUM OIL--An anthelmintic (medicine used for controlling parasitic worms) obtained by distillation of the crushed fruits of *Chenopodium ambrosioides* that during the early twentieth century was a primary treatment for ascarids and hookworms in various animals and humans. Chenopodium oil was usually administered at bedtime, on an empty stomach, and followed by a laxative, which aided in expelling parasitic worms. It was replaced by more effective anthelmintics in the 1940s.

CHOLERA--An acute, diarrheal illness caused by infection of the intestine with the bacterium *Vibrio cholerae*. It is most common in areas near brackish water or areas that have inadequate sewage treatment. Source of infection is often the consumption of contaminated food or water. The infection is often mild or without symptoms, but one in twenty infected persons develop severe cholera characterized by profuse watery diarrhea, vomiting and leg cramps, possibly leading to dehydration and shock, which can be fatal.

DICHLORODIPHENYLTRICHLOROETHANE (DDT)--The first synthetic organic pesticide, a chlorinated hydrocarbon (or organochlorine), DDT was discovered in 1939 by a Swiss chemist Paul Muller. In its early days, it was hailed as a miracle because it was inexpensive and toxic to a wide range of insect pests, yet appeared to have low toxicity to mammals. It did not require frequent reapplication and was insoluble, so was not washed off by rains. It was so effective at killing pests, thus boosting crop yields, and was so inexpensive to make that its use quickly spread over the globe. It was used for many non-agricultural applications such as de-lousing soldiers and civilians during World War II, and to control mosquitoes in residential areas of the United States.

ENDEMIC--When a disease is present or usually prevalent in a population or geographic area at all times.

EPIDEMIC--Disease outbreaks, especially infectious diseases, which occur suddenly in numbers clearly in excess of normal expectancy.

EPIDEMIOLOGY--The science concerned with the study of the factors determining and influencing the frequency and distribution of disease, injury, and other health-related events and their causes in a defined human population for the purpose of establishing programs to prevent and control their development and spread.

HOOKWORM--An intestinal parasite of humans that usually causes mild diarrhea and cramps, but heavy infection can cause serious problems for newborns, children, pregnant women and the malnourished. Persons are infected when they come into direct contact with soil contaminated with hookworm larvae, generally through walking barefoot or by accidentally swallowing.

HOST--An individual that harbors or nourishes another organism, such as a parasite.

LARVAE--The newly hatched, wingless, often wormlike form of many insects before metamorphosis.

MALARIA--A serious, sometimes fatal disease caused by the plasmodium parasite and transmitted to humans through the bites of infected mosquitoes. Once bitten, the parasites travel to the victim's liver, enter the liver cells, grow, multiply, and begin attacking the red blood cells. Symptoms of malaria include a fever and flu-like illness, including shaking, chills, headache, muscle aches, and tiredness. If untreated, some forms of malaria may cause kidney failure, seizures, delirium, coma, and death.

PARASITE--An organism that grows, feeds, and is sheltered on or in a different organism while contributing nothing to the survival of its host.

PARIS GREEN--An extremely poisonous, bright green powder that was used extensively after the 1870s as an insecticide and which was crucial to the anti-malarial campaigns of Soper and the Rockefeller Foundation in Brazil during the 1930s. Chemically it is a copper acetoarsenite that was prepared from arsenic trioxide and copper acetate. Replaced by newer pesticides that were less toxic to humans, such as DDT, by the 1940s and 1950s.

PLASMODIUM--The genus of the parasite that causes malaria. The genus includes four species that infect humans: *Plasmodium falciparum*, *Plasmodium vivax*, *Plasmodium malariae*, and *Plasmodium ovale*.

TYPHUS FEVER--Louse-borne typhus is the only rickettsial disease that can cause explosive epidemics in humans. *Rickettsia prowazekii* is transmitted by human body lice infected while feeding on the blood of persons with acute typhus fever. Infected lice excrete rickettsiae when feeding on a second host. People are infected by rubbing louse fecal matter or crushed lice into a bite wound, often through scratching. Typhus fever is characterized by the sudden appearance of headaches, chills, prostration, high fever, delirium, coughing, severe muscle pain, and sensitivity to light. A rash appears, usually on or near the upper trunk, on the fifth or sixth day of infection and then spreads to the entire body, except for the face, palms and soles of the feet.

VECTOR--The organism, typically an insect, which transmits an infectious agent to its alternative host, typically a vertebrate.

YELLOW FEVER--A viral disease caused by the yellow fever virus and transmitted to humans through the bites of infected mosquitoes. The virus remains silent during an incubation period of three to six days. This is followed by two distinct disease phases. The first, or "acute," phase, is normally characterized by fever, muscle pain, headache, chills, high fever, loss of appetite,

nausea, and/or vomiting. After three or four days most infected persons improve and symptoms disappear. Approximately one in five infected persons enter the second, or “toxic,” phase within twenty-four hours. The patient rapidly develops a fever, jaundice, and abdominal pain with vomiting. Bleeding might occur from the mouth, nose, eyes and/or stomach. Blood may appear in the vomit or feces. Kidney function deteriorates and may fail entirely. Half of patients who enter the “toxic” phase die within ten to fourteen days.

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